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IS 3625-1 (1983): Warp Tubes for Ring Spinning and Doubling
Spindles - Part : 1 Specific Requirements [TXD 14:
Machinery for Fabric Manufacture]



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“Knowledge is such a treasure which cannot be stolen”

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IS : 3625 (Part 1) - 1983

Indian Standard
SPECIFICATION FOR
WARP TUBES FOR RING SPINNING
AND DOUBLING SPINDLES
PART 1 GENERAL
(*Second Revision*)

UDC 677.052.962



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INDIAN STANDARDS INSTITUTION
MANAK BHAVAN, 9 BAHADUR SHAH ZAFAR MARG
NEW DELHI 110002

Gr 3

February 1984

AMENDMENT NO. 2 JANUARY 1989
TO
IS : 3625 (Part 1) - 1983 SPECIFICATION FOR
WARP TUBES FOR RING SPINNING AND
DOUBLING SPINDLES

PART 1 GENERAL

(*Second Revision*)

(*Clause 5.1*) — Substitute the following for the existing clause:
5.1 Dimensions

Thickness — The thickness of tubes shall not be less than 2 mm.

Inside Diameter and Length — The recommended inside diameters and lengths of tubes of various tapers are given in subsequent parts of the standard. However, the length of tube as prescribed by the buyer shall be subject to the following tolerances :

<i>Overall Length, mm</i>	<i>Tolerance, mm</i>
Up to 230	± 1.5
231 to 300	± 2.0
301 to 340	± 2.5
341 to 500	± 3.0
501 to 740	± 4.3
741 and above	± 5.0

NOTE 1 — The length of type A tube is equal to the length of the blade of spindle which is normally equal to the lift of the spindle +25 mm and the length of type B tube is equal to the lift of spindle +35 mm.

NOTE 2 — The length shall be determined by direct measurement and not by plug gauge.

(TDC 30)



AMENDMENT NO. 1 MARCH 1985

TO

IS:3625(Part 1)-1983 SPECIFICATION FOR WARP
TUBES FOR RING SPINNING AND DOUBLING SPINDLES
PART 1 GENERAL

(Second Revision)

(Cover page, Title page and page 3) -
Against title of Part 1, substitute 'SPECIFIC
REQUIREMENTS' for 'GENERAL'.

(Page 4, Fig. 1):

- a) Heading of Fig. 1 be amended as
'A Typical Open Top Warp Tube'.
- b) Substitute 'Overall Length' for
'Overall Height'.

(Page 4, Fig. 2) - Substitute 'Overall
Length' for 'Overall Height'.

(TDC 19)

Reprography Unit, ISI, New Delhi, India

Indian Standard
SPECIFICATION FOR
WARP TUBES FOR RING SPINNING
AND DOUBLING SPINDLES
PART 1 GENERAL
(*Second Revision*)

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TDC 19

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Coimbatore

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(*Continued on page 2*)

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IS : 3625 (Part 1) - 1983

(Continued from page 1)

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Indian Standard
SPECIFICATION FOR
WARP TUBES FOR RING SPINNING
AND DOUBLING SPINDLES

PART 1 GENERAL
(*Second Revision*)

0. FOREWORD

0.1 This Indian Standard (Part 1) (Second Revision) was adopted by the Indian Standards Institution on 9 December 1983, after the draft finalized by the Textile Mill Accessories (Other Than Jute) Sectional Committee had been approved by the Textile Division Council.

0.2 This standard was first published in 1966 and revised in 1971 to incorporate requirements of resistance to water absorption and steam conditioning. Second revision of the standard has been undertaken to include the requirements of plastic tubes. Recommended dimensions of tubes of various tapers are covered in subsequent parts of the standard.

0.3 For the purpose of deciding whether a particular requirement of this standard is complied with, the final value, observed or calculated, expressing the result of a test, shall be rounded off in accordance with IS: 2-1960*. The number of significant places retained in the rounded off value should be the same as that of the specified value in this standard.

1. SCOPE

1.1 This standard (Part 1) prescribes requirements of warp tubes used in spinning and doubling frames. These tubes are suitable for use on aluminium plug type spindles with spring grips.

2. TYPES

2.1 This standard covers tubes of following types :

- a) Type A — Open top warp tube (see Fig. 1), and
- b) Type B — Rolled-in top warp tube (see Fig. 2).

*Rules for rounding off numerical values (revised).

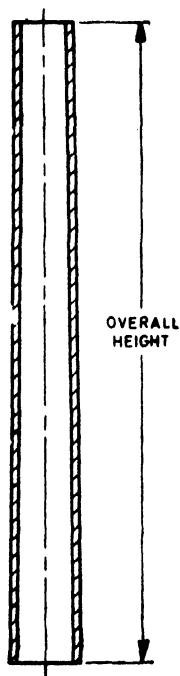


FIG. 1 A TYPICAL TOP
WARP TUBE

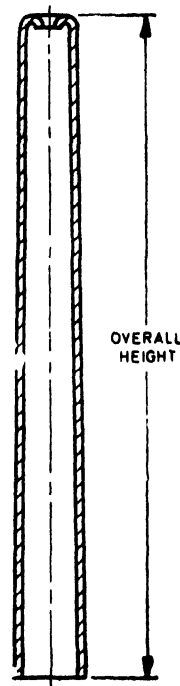


FIG. 2 A TYPICAL ROLLED IN
TOP WARP TUBE

3. TERMINOLOGY

3.1 For the purpose of this standard, the lift (of warp tube) shall mean the lift of spindle on which the tube is meant to be mounted or to be used.

4. MANUFACTURE

4.1 Paper Tubes — The kraft paper and process employed for the manufacture of paper tubes shall ensure that the tubes are resistant to water absorption and/or steam conditioning, if so required by the buyer (*see* 5.3 and 5.4).

4.2 Plastic Tubes — The tubes shall be moulded from high density polyethylene having density above 0.9524 g/ml and melt index not exceeding 25.0 g/10 minutes (*see* IS : 7328-1974*). The tubes to be subjected to steam conditioning shall be moulded from polypropylene

*Specification for high density polyethylene materials for moulding and extrusion.

copolymer or talc filled polypropylene or any other material as agreed to between the buyer and the seller.

4.2.1 The pigments used for colouring should be those that are stable and do not bleed in contact with wet yarn during conditioning.

4.3 Shield — The shield if prescribed by the buyer shall be rigidly fixed.

4.3.1 Metal shield shall be made of either tinplate having minimum thickness of 0.315 mm or sheet of any other metal with suitable anti-rust treatment of thickness as agreed to between the buyer and the seller subject to a tolerance of ± 0.03 mm.

4.4 Finish — The surface of warp tubes shall be smooth. The warp tubes shall be any of the following finishes as required :

- a) Plain,
- b) Grooved,
- c) Ferruled, or
- d) Wrapped base.

5. REQUIREMENTS

5.1 Dimensions — The recommended dimensions of tubes of various tapers are given in subsequent parts of the standard. However, the length of tube as prescribed by the buyer shall be subject to the following tolerances :

<i>Overall Length, mm</i>	<i>Tolerance, mm</i>
Up to 230	± 1.5
231 to 300	± 2.0
301 to 340	± 2.5
341 to 500	± 3.0
501 to 740	± 4.0
741 and above	± 5.0

NOTE 1 — The length of type A tube is equal to the length of the blade of spindle which is normally equal to the lift of the spindle + 25 mm and the length of type B tube is equal to the lift of spindle + 35 mm.

NOTE 2 — The length shall be determined by direct measurement and not by plug gauge.

5.1.1 Fit of Tube — The fit of the tube on the spindle shall be determined by sliding it on the gauge having a taper equal to the taper of the tube (see Fig. 3) without undue pressure and without twisting. If the

IS : 3625 (Part 1) - 1983

base of the tube lies within the two lines marked on the gauge, the warp tube shall be considered to be satisfactory in respect of fit. The two lines shall be marked at a distance of $\pm b/2$ from the nominal position (nominal bottom internal diameter) of the tube base on the gauge. The value for b shall be calculated as under :

$$b = \frac{D \times 3}{10}$$

where

b = fit tolerance, and

D = internal diameter at bottom.

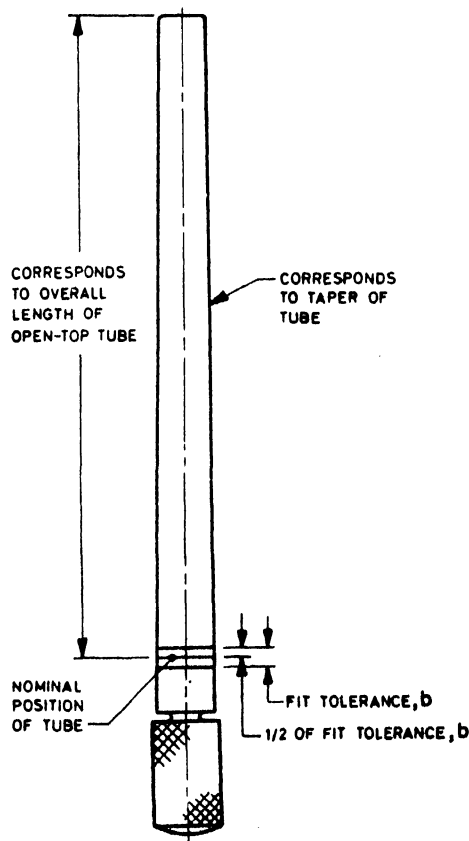


FIG. 3 A TYPICAL PLUG GAUGE

NOTE 1 — The internal diameter of tube shall provide for a radial clearance of 0.2 mm at base and 0.1 mm at top for the spindle on which it is intended to be used unless otherwise required by the buyer.

NOTE 2 — The marks $\pm b/2$ at the small end of the gauge are used for checking the internal diameter at top of tube. For checking the internal diameter at base of tube by means of corresponding marks on the gauge, the tube should be cut into parts.

.2 Concentricity — The tubes shall be concentric. However, eccentricity of 0.5 mm at the top and bottom shall be permissible when determined by a suitable test method as agreed to between the buyer and the seller.

.3 Water Absorption — The paper tubes shall not gain more than 5 percent in weight when immersed in water at room temperature for 30 minutes.

.4 Steam Conditioning — The tube shall not become distorted when subjected to the presence of steam at the conditions as may be prescribed by the buyer.

NOTE — The temperature of steam and the duration for which the tube should be subjected for mild and rigorous conditions are normally as follows :

<i>Condition</i>	<i>Temperature</i>	<i>Duration</i>
Mild	90°C	5 minutes
Rigorous	115°C	30 minutes

.5 Mass — The average mass of tubes shall be as agreed to between the buyer and the seller subject to a tolerance of ± 8 percent for paper tubes and ± 2 for plastic tubes. The mass of tubes is to be determined on a random sample of 100 tubes.

5.5.1 In case of dispute, the mass of paper tube shall be determined on the basis of oven-dry mass (at $103 \pm 2^\circ\text{C}$) plus 6 percent for moisture regain.

MARKING

.1 If possible, each warp tube shall be marked at a suitable place with the following. Otherwise this information shall be declared on the invoice :

- a) Manufacturer's name, initials or trade-mark ;
- b) Specific characteristics of the tubes by the following notations :
 No conditioning — NC,
 Water conditioning — W,
 Mild steam conditioning — MS,
 Rigorous steam conditioning — RS, and
- c) Code or batch number (to trace back the history of production).

IS : 3625 (Part 1) - 1983

6.1.1 The tubes may also be marked with the ISI Certification Mark.

NOTE — The use of the ISI Certification Mark is governed by the provisions of the Indian Standards Institution (Certification Marks) Act and the Rules and Regulations made there under. The ISI Mark on products covered by an Indian Standard conveys the assurance that they have been produced to comply with the requirements of that standard under a well-defined system of inspection, testing and quality control which is devised and supervised by ISI and operated by the producer. ISI marked products are also continuously checked by ISI for conformity to that standard as a further safeguard. Details of conditions under which a licence for the use of the ISI Certification Mark may be granted to manufacturers or processors, may be obtained from the Indian Standards Institution.

7. SAMPLING

7.1 The quantity of warp tubes manufactured from one definite material, of a definite lift, type and finish supplied to one buyer against one despatch note shall constitute a lot.

7.2 The conformity of the lot to the requirements of this standard shall be determined on the basis of the tests carried out on the samples selected from it.

7.3 Unless otherwise agreed to between the buyer and the seller, the sample shall be selected as prescribed in 7.4 and 7.5.

7.4 The number of cases to be selected from the lot shall depend on the size of the lot and shall be in accordance with col 1 and 2 of Table 1.

7.4.1 The cases selected according to 7.4 shall constitute the gross sample.

TABLE 1 SAMPLE SIZE AND PERMISSIBLE NUMBER OF NON-CONFORMING WARP TUBES

NO. OF CASES IN THE LOT	NO. OF CASES TO BE SELECTED (GROSS SAMPLE)	NO. OF WARP TUBES TO BE SELECTED FOR TESTING DIMENSIONS	PERMISSIBLE NO. OF NON- CONFORMING WARP TUBES
(1)	(2)	(3)	(4)
Up to 3	All	100	2
4 to 6	4	125	3
7 to 14	5	200	5
15 and above	10	315	7

7.5 The number of warp tubes to be tested and criterion for conformity for each of the characteristics shall be as follows :

<i>Characteristic</i>	<i>Number of Tubes to be Tested</i>	<i>Criterion for Conformity</i>
Concentricity	200 tubes from the gross sample drawn at random	Non-conforming tubes not to exceed 21
Dimensions and fit tolerance	See col 3 of Table 1	Non-conforming tubes not to exceed the corresponding number given in col 4 of Table 1
Mass	100 tubes drawn from those already tested for dimensions and fit tolerance	The observed value shall satisfy the requirement
Taper, water absorption and steam conditioning	10 tubes drawn from those already tested for weight	Each observed value satisfies the requirement

NOTE — For the random selection of warp tubes, IS : 4905-1968* may be used.

*Methods for random sampling.

INDIAN STANDARDS

ON

TEXTILE MILL ACCESSORIES (OTHER THAN JUTE).

IS :

1794-1971	Shuttles for plain calico looms (<i>first revision</i>)
1896-1970	Picking sticks for overpick cotton looms (<i>first revision</i>)
2058-1973	Shuttles for pirn-changing automatic cotton looms (<i>first revision</i>)
3265-1971	Weft pirns (taper fit) for use in shuttles for plain calico looms (<i>first revision</i>)
3496-1966	Dobby lags and pegs
3625-1983	Warp tubes for ring spinning and doubling spindles : Part I General (<i>second revision</i>)
3834-1966	Lease rods for cotton looms
4187-1966	Skewers for use on cotton speed frames
4416-1967	Dobby barrels
4417-1971	Weft pirns for shuttles for pirn-changing automatic cotton, woollen and worsted looms (<i>first revision</i>)
4715-1976	Picking sticks for automatic and underpick looms (<i>first revision</i>)
4888 (Part I)-	1982 Cones for yarn winding : Part I Half angle of the cone 3° 30' (<i>second revision</i>)
4888 (Part II)-	1982 Cones for yarn winding : Part II Half angle of the cone 4° 20' (<i>second revision</i>)
4888 (Part III)-	1982 Cones for yarn winding : Part III Half angle of the cone 5° 57' (<i>second revision</i>)
4888 (Part IV)-	1982 Cones for yarn winding : Part IV Half angle of the cone 9° 15' (<i>second revision</i>)
5141-1969	Wooden cones for winding yarn
5473-1969	Double flanged bobbins used in woollen and worsted mills
5492-1969	Prins for woollen and worsted plain looms
6268-1971	Accessories for use in shuttles for plain calico looms
7614-1975	Wooden bobbins for ring doubling and twisting frames
8684-1978	Classification of terms for shuttles
9280-1979	Wooden shuttle blocks for non-automatic looms
9287-1979	Wooden shuttle blocks for pirn-changing automatic looms
9337 (Part I)-	1979 Bobbins and pirns used in textile mills : Part I Wooden flyer bobbins
9337 (Part II)-	1983 Bobbins and pirns used in textile mills : Part II Wooden warp bobbins for rabbeth spindles
9794-1981	Boards/blanks for sley bottom, race, cap and box back of cotton looms
10310-1982	Nomenclature for formers for yarn packages

INTERNATIONAL SYSTEM OF UNITS (SI UNITS)

Base Units

QUANTITY	UNIT	SYMBOL
Length	metre	m
Mass	kilogram	kg
Time	second	s
Electric current	ampere	A
Thermodynamic temperature	kelvin	K
Luminous intensity	candela	cd
Amount of substance	mole	mol

Supplementary Units

QUANTITY	UNIT	SYMBOL
Plane angle	radian	rad
Solid angle	steradian	sr

Derived Units

QUANTITY	UNIT	SYMBOL	DEFINITION
Force	newton	N	1 N = 1 kg.m/s ²
Energy	joule	J	1 J = 1 N.m
Power	watt	W	1 W = 1 J/s
Flux	weber	Wb	1 Wb = 1 V.s
Flux density	tesla	T	1 T = 1 Wb/m ²
Frequency	hertz	Hz	1 Hz = 1 c/s (s ⁻¹)
Electric conductance	siemens	S	1 S = 1 A/V
Electromotive force	volt	V	1 V = 1 W/A
Pressure, stress	pascal	Pa	1 Pa = 1 N/m ²

INDIAN STANDARDS INSTITUTION

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